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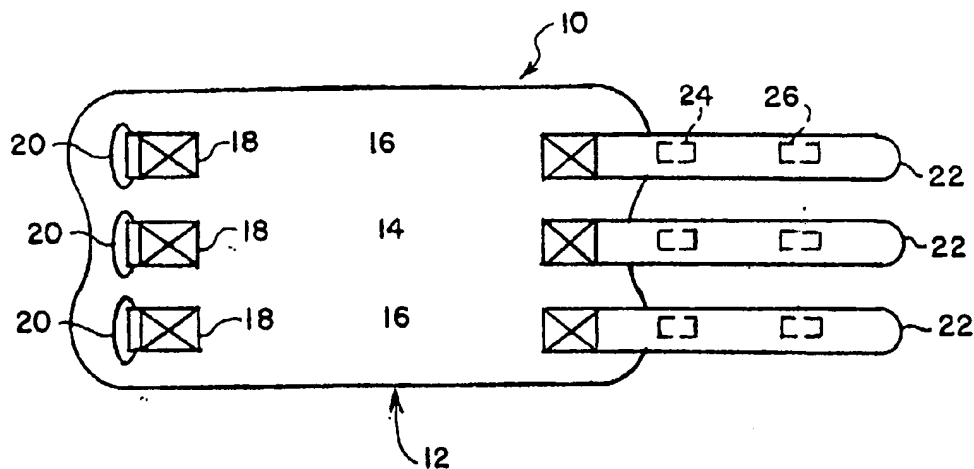
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With international search report.

(54) Title: DEVICE FOR THE STABILIZATION OF A FRACTURED PELVIS



(57) Abstract

A device (10) for stabilizing a fractured pelvis is disclosed which device comprises a "Neoprene" sheet (12) to which three belts (22) are secured. Three loops (20) are provided through which the belts (22) can be passed and then pulled back on themselves before being fastened using pieces of Velcro® (24, 26) sewn to the belts. The device when fitted stabilizes a fractured pelvis and inhibits internal haemorrhaging.



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(21) International Application Number: PCT/ZA00/00017 (22) International Filing Date: 07 February 2000 (07.02.2000) (30) Priority Data: 99/0953 08 February 1999 (08.02.1999) ZA (60) Parent Application or Grant MALAN, Peter, Francois [/]; (). MALAN, Peter, Francois [/]; (). BACON, Brian ; ().	Published	
(54) Title: DEVICE FOR THE STABILIZATION OF A FRACTURED PELVIS (54) Titre: DISPOSITIF DE STABILISATION D'UN BASSIN FRACTUREIS (57) Abstract <p>A device (10) for stabilizing a fractured pelvis is disclosed which device comprises a "Neoprene" sheet (12) to which three belts (22) are secured. Three loops (20) are provided through which the belts (22) can be passed and then pulled back on themselves before being fastened using pieces of Velcro (24, 26) sewn to the belts. The device when fitted stabilizes a fractured pelvis and inhibits internal haemorrhaging.</p> (57) Abrégé <p>Cette invention concerne un dispositif (10) conçu pour stabiliser un bassin fracturé. Ce dispositif comprend une feuille en néoprène (12) à laquelle sont attachées trois sangles (22). On peut passer ces trois sangles (22) à travers trois boucles (20), puis les retirer sur elles-mêmes avant de les fixer avec des pièces à boucles et à crochets (24, 26) cousues sur les bandes. Le dispositif, une fois installé, permet la stabilisation d'un bassin fracturé et le blocage d'une hémorragie interne.</p>		

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Description

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DEVICE FOR THE STABILIZATION OF A FRACTURED PELVIS

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FIELD OF THE INVENTION

THIS INVENTION relates to a device for the stabilization of a fractured pelvis.

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BACKGROUND TO THE INVENTION

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One of the more common life threatening injuries seen in motor vehicle and industrial accidents is a fracture of the pelvis. This injury, particularly if severe, causes major bleeding internally resulting in many deaths as the bleeding is difficult to control. This is particularly pertinent in the pre-hospital setting where ambulance personnel either do not have the expertise to diagnose a fractured pelvis or do not have the means to control the bleeding.

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Definitive treatment of a fractured pelvis remains fixation of the fracture in theatre by an orthopaedic surgeon. However, delay in this definitive treatment is often very long due to on-scene delays in stabilization by ambulance personnel, further investigation on X-rays in the trauma unit to which the patient is taken, delays in arranging theatre time etc.

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Early stabilization of the fractured pelvis is essential of the patient is to

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have reasonable prospects of survival. To the best of applicant's knowledge the standard treatment, even in major trauma units, is to wrap a sheet around the patient's pelvic region, pull it as tight as possible and fasten it. An alternative and expensive treatment, but one that is rarely available, is the use of an inflatable MAST (Medical Anti-Shock Trousers) suit also known as a PASG (Pneumatic Anti-Shock Garment). These are difficult to apply, difficult to remove and do not allow any abdominal procedures to be performed whilst applied. This product was not designed specifically for use in pelvic stabilization.

BRIEF DESCRIPTION OF THE INVENTION

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According to the present invention there is provided a device for use in the stabilization of a fractured pelvis, the device comprising a resiliently flexible sheet which can be placed under a patient and on which the patient can lie in a prone position, at least two spaced apart belts carried by one edge zone of the sheet, at least two loops carried by the opposite edge zone of the sheet and through which the belts can be passed, and means for fastening the belts in a tightened condition after they have been passed through the loops and turned back on themselves, the belts and loops enabling said edge zones of the sheet to be pulled upwardly to lie on each side of the patient and to overlie the patient's pelvic region with the belts spanning across the patient from one of said edge zones to the other.

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BRIEF DESCRIPTION OF THE DRAWINGS

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For a better understanding of the present invention, and to show how the same may be carried into effect, reference will now be made, by way of example, to the accompanying drawings in which:-

Figure 1 is a plan view of a device in accordance with the present invention in a lay flat condition;

Figure 2 is a pictorial view showing the device fitted to a patient; and

Figure 3 is a diagrammatic section illustrating the fitted device.

DETAILED DESCRIPTION OF THE DRAWINGS

The device 10 illustrated comprises a sheet 12 of resiliently flexible material. The sheet may be a natural rubber or any synthetic material with the resiliently flexible properties of rubber. "Neoprene" in the form of a 4mm thick sheet is suitable.

The dimension of the sheet 12 in one direction (the length direction) is such that when placed under a patient's pelvis and wrapped around the patient, the edge regions of the sheet overlie the patient's hips and thighs (see Figure 2). In the other direction (the width direction) the sheet has sufficient size to extend from the patient's waist to a mid-point on the patient's thighs. This can also be seen in Figure 2.

The edges which extend in the direction of the width of the sheet 12 are

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not straight but generally sinusoidal (see Figure 1). Thus the width of the sheet 12 is narrower at a central zone 14 than it is at two end zones 16 which lie one on each side of the central zone 14. This enables the device to better conform to the shape of the body when it is fitted as will be described hereinafter.

Three webbing lengths 18 are provided. Each length is turned back on itself and sewn to itself and to the sheet 12. The webbing lengths 18 form the means which attach metal loops 20 to the sheet 12. The webbing lengths 18 are in a row adjacent one of the sinusoidally shaped edges of the sheet 12.

Three belts 22 each have one end thereof sewn to the sheet 12 adjacent the other of the sinusoidally shaped edges of the sheet 12. The belts thus lie parallel to one another. The belts are also of Neoprene.

It is possible to use two belts but for stability three are preferred.

On the underface of each belt 22, as viewed in Figure 1, there are two sewn on pieces 24, 26 of the material known as "Velcro". One piece is of the male type and includes a multitude of hooks and the other is of the female type and includes a multitude of loops. The pieces 24, 26 are spaced apart along the length of the respective belt.

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In use of the device, the injured patient is raised sufficiently to enable that edge of the sheet which carries the loops 20 to be slid under the patient. The patient is positioned so as to lie on the sheet with the edge zones of the sheet protruding one or each side of the patient. The edge zones are then lifted so that they extend upwardly and then inwardly towards one another to overlie the patient as shown in Figure 2. The belts 12 are each passed through a respective loop 20, turned back on themselves and pulled tight before being fastened by pressing the pieces of "Velcro" into face-to-face contact. The device is now fitted to the patient as shown in Figures 2 and 3 and causes lateral compression of the pelvis.

The device maintains the stability of the fractured pelvis and inhibits internal life threatening haemorrhaging by tamponading venous haemorrhaging. Because of the positions of the belts 22 (see Figure 2) urethral or supra pubic urinary catheters can be inserted without releasing the belts. In addition the sheet 12 acts as a protective cushion which covers the sacrum and protects the sacrum against pressure necrosis which can result from long periods on a wooden trauma board.

Claims

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CLAIMS:

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1. A device for stabilizing a fractured pelvis, the device comprising a resiliently flexible sheet which can be placed under a patient and on which the patient can lie in a prone position, at least two spaced apart belts carried by one edge zone of the sheet, at least two loops carried by the opposite edge zone of the sheet and through which the belts can be passed, and means for fastening the belts in a tightened condition after they have been passed through the loops and turned back on themselves, the belts and loops enabling said edge zones of the sheet to be pulled upwardly to lie on each side of the patient and to overlie the patient's pelvic region with the belts spanning across the patient from one of said edge zones to the other.

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2. A device as claimed in claim 1, and including three spaced apart belts.

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3. A device according to claim 1 or 2, wherein said fastening means comprises pieces of material including interengagable loops and hooks sewn to the belts.

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4. A device as claimed in claim 1 or 2, wherein each of said loops is secured to the sheet by a piece of webbing that is passed through the respective loop, turned back on itself, and sewn to itself and to said sheet.

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5. A device as claimed in claim 1 or 2, wherein the edges of the sheet bounding said edge zones are generally sinusoidal shape so that the sheet has a central zone which is relatively narrow and wider zones on each side of the central zone.

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6. A method of treating a patient with a fractured pelvis, the method comprising placing a resiliently flexible sheet under the prone patient with the sheet protruding on each side of the patient, lifting the edge zones of the sheet to lie adjacent the patient, inserting belts carried by one edge zone of the sheet through loops carried by the opposite edge zone of the sheet, pulling the belts tight so that the patient's pelvic region is stabilized, turning the belts back on themselves, and fastening the belts in their tightened condition.

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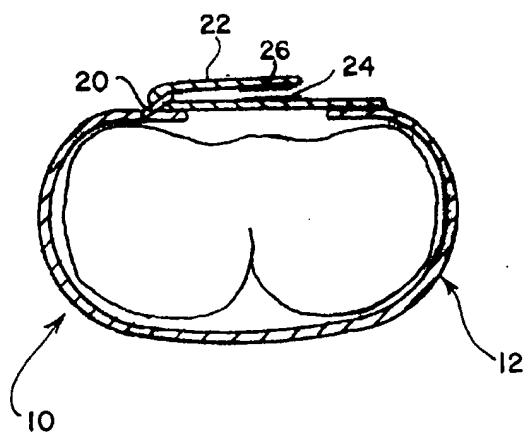
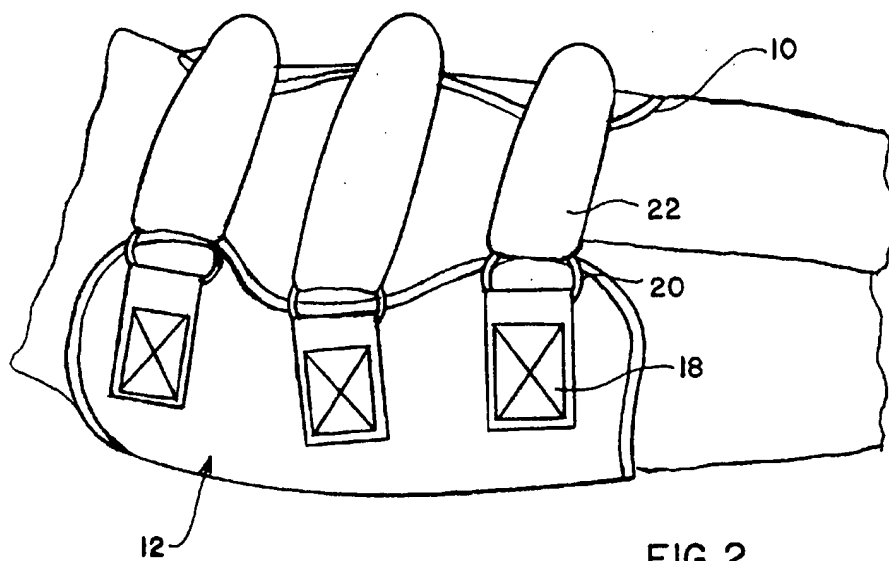
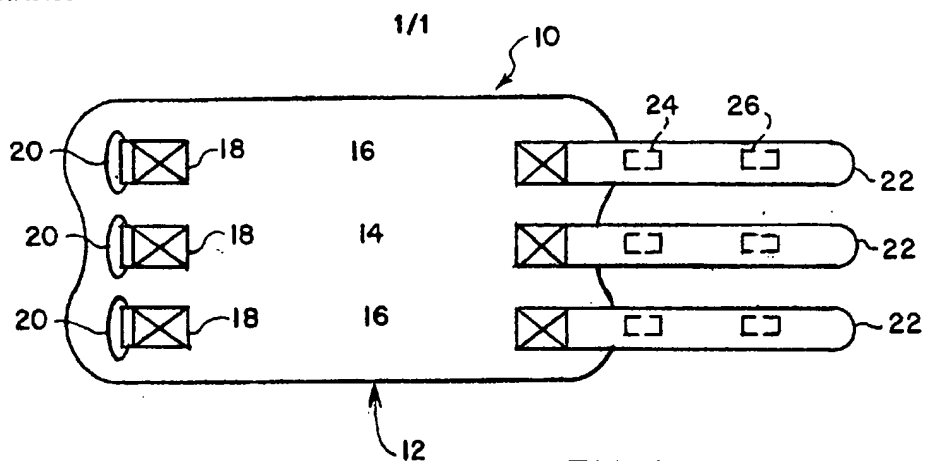
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7. A device for stabilizing a fractured pelvis, the device comprising a resiliently flexible sheet which can be placed under a patient and on which the patient can lie in a prone position, at least two spaced apart belts carried by one edge zone of the sheet, and means for fastening the belts in a tightened condition, the belts enabling said edge zones of the sheet to be pulled upwardly to lie on each side of the patient and to overlie the patient's pelvic region with the belts spanning across the patient from one of said edge zones to the other.

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/ZA 00/00017

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61F5/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 576 154 A (HYMAN ALAN A ET AL) 18 March 1986 (1986-03-18) column 1, line 61 -column 3, line 46; figures	1-4,7
X	US 4 884 562 A (STONE MARIO M) 5 December 1989 (1989-12-05) claims; figures	1,7
A	US 4 696 291 A (TYO JAMES H) 29 September 1987 (1987-09-29) abstract	5
A	WO 97 19658 A (AMBU INT AS ;BAUMGAERTEL FRIEDRICH (DE)) 5 June 1997 (1997-06-05) abstract	1,7

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

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9 May 2000

Date of mailing of the international search report

15/05/2000

Name and mailing address of the ISA

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INTERNATIONAL SEARCH REPORT

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Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.: 6
because they relate to subject matter not required to be searched by this Authority, namely:
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because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)

This International Searching Authority found multiple inventions in this International application, as follows:

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2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
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- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 4576154	A	18-03-1986	NONE	
US 4884562	A	05-12-1989	NONE	
US 4696291	A	29-09-1987	NONE	
WO 9719658	A	05-06-1997	DK 134195 A	28-05-1997
			AU 7621996 A	19-06-1997
			EP 0961600 A	08-12-1999